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Urban secondary carbonates deposits from aqueducts and underground structures as archive of past water quality and changes in surface land use. Case studies from the Roman period to the present day.

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Secondary carbonates, deposited by the passage or the slow percolation of water, are present in various types of man-made underground structures (aqueducts, tunnels, artificial galleries). These deposits, similar to speleothems in caves, records the geochemistry of past waters that governed their deposition.

Trace elements contentor the isotopic composition of certain elements (lead or strontium, for example) may reflect anthropogenic activities (agriculture, deforestation/reforestation, use of metals, change of water supply source, etc.) above the structure or in the water infiltration or catchment area.

Establishing a reliable chronology for these deposits is a major scientific challenge, which can in some cases be overcome by using a combination of absolute and relative dating methods. We will present the application of several of these methods (uranium-thorium dating, 14C, counting laminae or using markers) on concretions in different anthropised contexts, over a period extending from the Roman times to the present day. Once dated, these concretions can be used to discuss the quality or origin of water in the past, and examples from different regions will be presented.